

Treatment of calcareous expansive clays

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Abstract: The geology, climatic condition and the environment of extreme disintegration, strong hydration and restrained leaching have a large influence on the formation of expansive clays in the Eastern province of Saudi Arabia. Calcareous clays in the Eastern province are highly plastic and possess moderate to very high swelling potential. In this study three different techniques were utilized to reduce plasticity and/or swelling potential of the calcareous expansive clay. These techniques are mechanical stabilization, mixing with various proportions of local dune sand, and treatment with chemicals. The chemicals used are locally produced commercial lime and potassium nitrate. The influence of different treatment techniques was investigated by comparing plasticity, mineralogy, physico-chemical properties and swelling potential.